

Attorney Docket No.: T7105(C)
Serial No.: 10/581,292
Filed: June 1, 2006
Confirmation No.: 3161

DECLARATION UNDER 37 CFR §1.132

I, Shiping Zhu, declare and state:

1. I am an British citizen, residing at 32 Tiverton Road, Bedford, MK40 3DL, UK
2. I have been awarded the degree of *PhD* from Imperial college, London
3. I have been employed by Unilever since August 1998, and am presently a Research Scientist in Corporate Research at Unilever's Colworth Laboratory. During my employment at Unilever, I have been engaged in research on phase behaviour and structuring of complex materials related to skin care products.
4. I am one of the named inventors of U.S. patent application Serial Number 10/581,292 hereafter designated "APPLICATION".
5. I supervised the performance of the experiments described below.
6. Given my education and experience, particularly in the area of skin care and surfactant containing compositions, I consider myself able to provide the following testimony based on experiments conducted by me or under my supervision.

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COMPARATIVE TESTING

Seven mixtures were prepared whose compositions are summarized in Table 1. Mixture 1 contains about 7% neutralized fatty acid ("soap") and has essentially the same composition as Example 1 of the APPLICATION (Table 1, page 12). Mixture 2 contains 13.5% neutralized fatty acid and has the same composition as Example 3 of the APPLICATION (Table 3, page 14).

The fatty acids and the neutralized fatty acids in Mixtures 1 and 2 were from the same fatty acid blend which in this case was Pristearine® 4911 which has the following fatty acid distribution: 52% stearic (C18), 45% palmitic acid (C16)) and 2% myristic acid (C14).

Mixture 1A and 2A have the same composition as mixture 1 and 2 except that the potassium soap used is derived from the neutralization of an 80/20 mixture of fatty acids derived from beef tallow and coconut oil.

Soaps formed from the neutralization of fatty acids derived from tallow and coconut oil blends are widely used in the manufacture of soap bars and are taught as preferred soaps by for example Crookham et al in US Patent No. 6,576,228 and by Farrell et al in US Patent No. 6,630,432. The composition of this blend is approximately: 10% potassium laurate, 6% potassium myristate, 23% potassium palmitate, 17% potassium stearate and 31% potassium oleate. The relatively high levels of the more soluble laurate and oleate soaps are required to produce abundant lather

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Mixtures 3-5 have increasing levels of the tallow/coco soap blend (20% to 85%) relative to Mixture 2A (13.5%). However, the remaining solid components in mixtures 3-5 (glycerol monostearate, glycol monostearate, cetyl alcohol, and fatty acid) are present in the same relative proportions as in Mixture 2A, i.e., the soap was substituted for the remaining solids and the water content was held constant.

Mixtures 3-5 have a soap content within the range disclosed for personal washing bars (e.g., soap bars) by Crookham et al (column 3 line 21-23) and by Farrell et al (column 3, lines 52-54).

II. Sample Preparation

All the mixtures were prepared according to the method disclosed in the APPLICATION under Example 1. In summary, all the ingredients of each composition were mixed and heated to above 80°C. Subsequently, the mixture was cooled to about 20°C and then ground into a powder. Mixtures 1 and 2 formed an isotropic liquid at 80°C, while mixtures 1A, 2A, and 3-5 did not dissolve or melt completely.

III. Comparative testing process

The mixtures were diluted with water to a concentration of 5% and 10% by weight and assessed on the following attributes

a. **Foam** Foam was assessed by a method similar to that disclosed by Crookham et al (column 13, lines 1-5). A 40 gm sample of each dilution was placed in a 100 ml graduated cylinder, shaken for 10 seconds and the foam volume recorded.

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b. Lather A few milliliters of each dilution was placed in the palm of one hand and diluted with 1-3 drops of water and rubbed between the hands for 30 seconds. The ability of the test mixture each to form lather (concentrated dispersion of small gas bubbles dispersed in a liquid) was visually assessed.

c. Qualitative rheological and visual properties The thickness, visual appearance and rheological properties were qualitatively asses by observing the flow of each dilution and how it looked and felt when rubbed on the skin.

Table 1 Compositions of Experimental Mixtures

Mixture No.	1	2	1A	2A	3	4	5
COMPONENT							
Glycerol monostearate	58.5	47.5	58.5	47.5	43.7	26.6	6.6
Glycol monostearate	8.5	9.5	8.5	9.5	8.8	5.3	1.3
Cetyl alcohol	5	7	5	7	6.4	3.9	0.97
C14/C16/18 Fatty acid (Pristearine® 4911)	18.5	19	18.5	19	17.5	10.6	2.6
Potassium soap C14/C16/18 Fatty acid (Pristearine® 4911) neutralized with potassium hydroxide	7	13.5					
Potassium soap blend of 80% tallow and 20% coconut oil fatty acids neutralixed with potassium hydroxide			7	13.5	20	50	85
Water	1.7	3.5	1.7	3.5	3.5	3.5	3.5

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IV. Results

A. Foam and Lather. The results of foam volume measurements and lather generation assessments are collected in Table 2.

Table 2. Experimental Foam and Lather generation

PROPERTY	Type of Neutralized Fatty Acid	% Neutralized Fatty Acid	Dilution (%)	Foam Volume by cylinder shake test (ml)	Lather generated by rubbing
MIXTURE NO.					
1	Pristearine® 4911	7%	5.0	Nil	No
			10.0	Nil	No
1A	80/20 Tallow coco soap"	7%	5.0	6.5	No
			10.0	Nil	Trace - noticeable but much less than mixtures 3-5
2	Pristearine® 4911	13.5%	5.0	Nil	No
			10.0	Nil	No
2A	80/20 Tallow coco soap	13.5%	5.0	6	No
			10.0	Nil	Trace - noticeable but much less than mixtures 3-5
3	80/20 Tallow coco soap	20%	5.0	15	Yes
			10.0	2	Yes
4	80/20 Tallow coco soap	50%	5.0	33	Yes
			10.0	35	Yes
5	80/20 Tallow coco soap	85%	5.0	25	Yes
			10.0	25	Yes

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Inspection of Table 2 indicates the following:

- No lather or foam was generated from dilutions of mixtures 1 and 2 in which the neutralized fatty acid was derived from a mixture of stearic acid, palmitic acid and myristic acid.
- Only mixtures 3-5 which have soap levels of 20% to 85% generated significant foam and lather, especially for mixtures 4 and 5 which contain 50% and 85% soap respectively. The quality of the lather generated from dilutions of mixtures 3-5 is typical of what one observes by rubbing a soap bar on the skin in the presence of water, i.e., washing hands with a bar of soap.
- Mixtures 1A and 2A in which the neutralized fatty acid was a blend of tallow and coco soap present at a level less than 20% (7% and 13.5% generated slight foam and trace but noticeable lather under some conditions. However, the lather generation was far less than that generated when the soap content was 20% or more.

B. Qualitative observations on rubbing dilutions of the mixtures on the skin.

Dilutions of mixtures 1A, 2A and 3-5 were all noticeable less viscous than dilutions of mixtures 1 and 2.

Dilutions of mixtures 1 and 2 and to a lesser extent mixtures 1A and 2A had a look and feel of a skin lotion or skin cream when rubbed on and into the skin. In contrast, dilutions of mixtures 3-5 were distinctly different and formed increasingly sticky, viscoelastic stringing foams when rubbed on the skin.

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V. Conclusions

The results presented above indicate that mixtures having compositions selected according to the APPLICATION, form products that have the sensory properties of a skin lotion or skin cream when diluted with water provided the %neutralized fatty acid is less than about 15% (7% or 13.5% by weight in the present experiments). In this composition range a neutralized fatty acid derived from a combination of palmitic acid, stearic acid and myristic acid provided products that were more viscous and had no tendency to produce even a trace of lather or foam compared with products in which the fatty acid was derived from a mixture of tallow and coco fatty acids (80/20). The latter fatty acid blend contains lauric and oleic acids in addition to palmitic, stearic and myristic acids.

Mixtures which contained 20% or greater tallow/coco soap with remaining ingredients selected according to the APPLICATION did not have the sensory properties of a skin lotion or cream when diluted with water. These products foamed and generated a lather when rubbed on the skin similar to the lather formed with a soap bar.

I further declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this patent application or any patent issuing thereon.

Dated: 05-Dec-2008


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Shiping Zhu